

U.S. Serial No.: 09/807,175

IN THE CLAIMS

Claim 1 (currently amended) A cleaning and/or treatment device comprising a clean solution tank, a dirty solution tank, and a movable cleaner head, ~~[[which]]~~ said cleaner head comprises at least one solution supply opening for supplying clean solution to a surface, said solution supply opening being in solution communication with said clean solution tank, and at least one solution recovery opening for recovering dirty solution from a surface, said solution recovery opening being in solution communication with said dirty solution tank, said cleaning device comprising means for supplying solution from said clean solution tank through said supply opening and suction means for recovering solution through said recovery opening to said dirty solution tank, said cleaning device further comprising a filter unit for cleaning dirt from said dirty solution and means for recirculating said cleaned solution to said clean solution tank, wherein said filter unit comprises at least one cross-flow filter, said cross-flow filter preferably being a membrane filter.

Claim 2 (currently amended) A device according to claim 1, wherein the device is adapted to supply solution from said clean solution tank through said supply opening by ~~means of gravity~~ or by ~~means of~~ a pump.

Claim 3 (currently amended) A device according to claim 1, wherein said membrane filter comprises a membrane packed in a flat, spiral wound or tubular configuration, ~~preferably a tubular or hollow fibre type configuration.~~

Claim 4 (previously presented) A device according to claim 1, wherein said membrane filter comprises a membrane having a pore size between 10 - 10,000 kD.

Claim 5 (previously presented) A device according to claim 1, wherein said membrane filter comprises a membrane having a pore size between 0.001 - 5 μm .

U.S. Serial No.: 09/807,175

Claim 6 (previously presented) A device according to claim 1, wherein said membrane filter comprises a membrane made of one or more materials selected from polymeric materials, ceramic materials, and metals.

Claim 7 (currently amended) A device according to claim 1, wherein said filter unit further comprises a coarse screen unit for precleaning the dirty solution before ~~[[it]]~~ the dirty solution enters the membrane filter.

Claim 8 (original) A device according to claim 7, wherein said coarse screen unit comprises one or more screens having a mesh width in the range 50 - 2,000 μm .

Claim 9 (previously presented) A device according to claim 7, wherein said coarse screen unit comprises multiple screens arranged in a sandwich structure.

Claim 10 (previously presented) A device according to claim 1, further comprising a pumping means for pumping clean solution from the clean solution tank in backflow through the filter unit.

Claim 11 (original) A device according to claim 10, further comprising a control unit for starting and stopping said pumping means for pumping clean solution from the clean solution tank in backflow through the filter unit.

Claim 12 (original) A cleaning and/or treatment device in combination with a filtering station, said cleaning device comprising a clean solution tank, a dirty solution tank, and a movable cleaner head, which cleaner head comprises at least one solution supply opening for supplying clean solution to a surface, said solution supply opening being in solution communication with said clean solution tank, and at least one solution recovery opening for recovering dirty solution from a surface, said solution recovery opening being in solution communication with said dirty solution tank, said cleaning device comprising means for

U.S. Serial No.: 09/807,175

supplying solution from said clean solution tank through said supply opening and suction means for recovering solution through said recovery opening to said dirty solution tank, said cleaning device further comprising a first connection pipe adapted to be connected to an inlet pipe on the filtering station for providing a solution communication from said dirty solution tank to said filtering station, and a second connection pipe adapted to be connected to an outlet pipe on the filtering station for providing a solution communication from said filtering station to said clean solution tank, said filtering station comprising a filter unit for cleaning dirt from said dirty solution and means for recirculating said cleaned solution to said clean solution tank, wherein said filter unit comprises at least one cross-flow filter, said cross-flow filter preferably being a membrane filter.

Claim 13 (currently amended) A device in combination with a filtering station according to claim 12, wherein the device is adapted to supply solution from said clean solution tank through said supply opening by ~~means of~~ gravity or by ~~means of~~ a pump.

Claim 14 (currently amended) A device in combination with a filtering station according to claim 12, wherein said membrane filter comprises a membrane packed in a flat, spiral wound or tubular configuration, ~~preferably a tubular or hollow fibre type configuration.~~

Claim 15 (previously presented) A device in combination with a filtering station according to claim 12, wherein said membrane filter comprises a membrane having a pore size between 10 - 10,000 kD.

Claim 16 (previously presented) A device in combination with a filtering station according to claim 12, wherein said membrane filter comprises a membrane having a pore size between 0.001 - 5 μm .

U.S. Serial No.: 09/807,175

Claim 17 (previously presented) A device in combination with a filtering station according to claim 12, wherein said membrane filter comprises a membrane made of one or more materials selected from polymeric materials, ceramic materials, and metals.

Claim 18 (currently amended) A device in combination with a filtering station according to claim 12, wherein said filter unit further comprises a coarse screen unit for precleaning the dirty solution before [[it]] the dirty solution enters the membrane filter.

Claim 19 (original) A device in combination with a filtering station according to claim 18, wherein said coarse screen unit comprises one or more screens having a mesh width in the range 50 - 2,000 μm .

Claim 20 (previously presented) A device in combination with a filtering station according to claim 18, wherein said coarse screen unit comprises multiple screens arranged in a sandwich structure.

Claim 21 (previously presented) A device in combination with a filtering station according to claim 1, further comprising a pumping means for pumping clean solution from the clean solution tank in backflow through the filter unit.

Claim 22 (original) A device in combination with a filtering station according to claim 21, further comprising a control unit for starting and stopping said pumping means for pumping clean solution from the clean solution tank in backflow through the filter unit.

Claim 23 (currently amended) A process of recycling solution containing water and detergent and/or treatment chemicals in a cleaning and/or treatment device comprising a clean solution tank, a dirty solution tank, and a movable cleaner head, which cleaner head comprises at least one solution supply opening for supplying clean solution to a surface, said solution supply opening being in solution communication with said clean solution tank, and at least one solution

U.S. Serial No.: 09/807,175

recovery opening for recovering dirty solution from a surface, said solution recovery opening being in solution communication with said dirty solution tank, said cleaning and/or treatment device comprising ~~pumping means for supplying solution from said clean solution tank through said supply opening and~~ suction means for recovering solution through said recovery opening to said dirty solution tank, said process comprising the steps of transporting the dirty solution from the dirty solution tank through a filter unit for cleaning dirt from said dirty solution and recirculating the cleaned solution to the clean solution tank, wherein said filter unit comprises at least one cross-flow filter, said cross-flow filter preferably being a membrane filter.

Claim 24 (currently amended) A process according to claim 23, solution from said clean solution tank is supplied through said supply opening by ~~means of~~ gravity or by ~~means of~~ a pump.

Claim 25 (currently amended) A process according to claim 23, wherein said membrane filter comprises a membrane packed in a flat, spiral wound or tubular configuration, ~~preferably a tubular or hollow fibre type configuration.~~

Claim 26 (previously presented) A process according to claim 23, wherein said membrane filter comprises a membrane having a pore size between 10 - 10,000 kD.

Claim 27 (previously presented) A process according to claim 23, wherein said membrane filter comprises a membrane having a pore size between 0.001 - 5 μm .

Claim 28 (previously presented) A process according to claim 23, wherein said membrane filter comprises a membrane made of one or more materials selected from polymeric materials, ceramic materials, and metals.

U.S. Serial No.: 09/807,175

Claim 29 (currently amended) A process according to claim 23, wherein said filter unit further comprises a coarse screen unit for precleaning the dirty solution before ~~[[it]]~~ the dirty solution enters the membrane filter.

Claim 30 (original) A process according to claim 29, wherein said coarse screen unit comprises one or more screens having a mesh width in the range 50 - 2,000 μm .

Claim 31 (previously presented) A process according to claim 29, wherein said coarse screen unit comprises multiple screens arranged in a sandwich structure.

Claim 32 (previously presented) A process according to claim 23, further comprising at least one step of pumping clean solution from the clean solution tank in backflow through the filter unit for cleaning said filter unit.

Claim 33 (currently amended) A process according to claim 32, wherein the step of pumping clean solution from the clean solution tank in backflow through the filter unit is performed at regular intervals, ~~preferably from 1 to 10 times per minute~~.

Claim 34 (currently amended) A process according to claim 32, wherein each step of pumping clean solution from the clean solution tank in backflow through the filter unit has a duration of from 0.5 to 10 seconds, ~~preferably 1 to 3 seconds~~.

Claim 35 (currently amended) A process according to claim 32, wherein the back-flush procedure of pumping clean solution from the clean solution tank in backflow through the filter unit takes 0.5 - 30 seconds ~~per minute~~.

Claim 36 (previously presented) A process according to claim 32, wherein the back-flush procedure of pumping clean solution from the clean solution tank in backflow through the filter unit is controlled by an automatic control unit.

U.S. Serial No.: 09/807,175

Claim 37 (currently amended) A process according to claim 23, wherein clean solution is recirculated to the clean solution tank at a flow of ~~[[from]]~~ about 0.1 to 1,000 l/hr.

Claim 38 (previously presented) A process according to claim 23, wherein the solution is a detergent solution having a detergent concentration in the range 0.001 - 25 % by weight.